

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 46

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* KAZUO SAITO  
and  
TAKASHI HIRONAKA

---

Appeal No. 1998-2920  
Application No. 08/128,740

---

ON BRIEF

---

Before PAK, WARREN, and OWENS, *Administrative Patent Judges*.  
PAK, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 21 through 23 and 26 through 31, which are all of the claims pending in the above-identified application.

Claim 21 is representative of the subject matter on

Appeal No. 1998-2920  
Application No. 08/128,740

appeal and reads as follows:

21. An article of manufacture comprising a heat-resistant adhesive provided between two surfaces, said adhesive comprising a carbonized resin prepared by firing a resin in a vacuum or an inert atmosphere, wherein the carbonized resin is a carbonized polycarbodiimide resin.

In support of his rejection, the examiner relies on the following prior art references:

Merry	4,513,173	Apr. 23,
1985		
Takabatake	4,975,261	Dec. 4,
	1990	

Claims 21 through 23 and 26 through 31 stand rejected under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Takabatake and Merry.

We reverse the aforementioned § 103 rejection. Our reasons for this determination follow.

Takabatake is directed to a high density, high strength carbon-carbon composite which is useful for machine parts, and electrical and electronic instrument parts. See column 1, lines 7-20, together with abstract. To form this composite, an aggregate, such as a bundle of carbon fiber, is initially

Appeal No. 1998-2920  
Application No. 08/128,740

immersed in a liquid carbonizable material selected from the group consisting of a thermosetting resin, such as a phenolic resin, furan resin or the like and a pitch. See column 3, lines 15-41. The impregnated aggregate is carbonized under inert

atmosphere or pressurized inert atmosphere. See column 5, lines 26-34. Takabatake's composite is said (column 3, lines 1-11) to

overcome the problem of loss of mechanical strength of composite material due to formation of a large number of cracks and detachment caused by insufficiency of adhesivity on the interfacial surface of a reinforcement material and a matrix at the time of shaping and carbonization of carbon[-]carbon composite materials . . . .

The examiner acknowledges that Takabatake does not teach employing a polycarbodiimide. See Answer, page 5. To remedy this deficiency, the examiner relies on the disclosure of Merry. *Id.* According to the examiner (*Id.*), "Merry discloses that polycarbodiimide or phenolic resins may be used as a carbon source (col. 1, line 31)." Relying on this disclosure, the examiner concludes (Answer, page 5) that:

It would have been obvious to one having ordinary skill in the art at the time of the invention to substitute polycarbodiimide for the resin of Takabatake in view of the teaching in Merry that these materials are functional equivalents.

We are not convinced by the examiner's assertion. On this record, we determine that the examiner has not demonstrated that the applied prior art references as a whole

Appeal No. 1998-2920  
Application No. 08/128,740

would have suggested the claimed subject matter within the meaning of 35 U.S.C. § 103. Merry, for example, is directed to intumescent fire protective sheaths for electrical cables. See column 1, lines 5-8. Although Merry describes both polycarbodiimide and phenolic resins as char-forming resins, they are used as active fire retardant materials for intumescent fire protective sheaths. See column 1, lines 29-32. In other words, they are not shown to be functionally equivalent for the purpose of forming the high density, high strength carbon-carbon composite described in Takabatake. The examiner simply has not established that the polycarbodiimide described in Merry is useful for forming the high density, high strength carbon-carbon composite described in Takabatake. See Answer in its entirety. That is, nowhere does the examiner evince that the polycarbodiimide described in Merry is useful for avoiding "formation of a large number of cracks and detachment caused by insufficiency of adhesivity on the interfacial surface of a reinforcement material and a matrix" (Takabatake, col. 3, ll. 3-6). The examiner has not even asserted that the polycarbodiimide described in Merry is a thermosetting resin having similar properties as phenolic and

Appeal No. 1998-2920  
Application No. 08/128,740

furan resins as required by Takabatake.

Appeal No. 1998-2920  
Application No. 08/128,740

Given this record, we concur with appellants that the examiner has not established a *prima facie* case of obviousness regarding the claimed subject matter within the meaning of 35 U.S.C. § 103. Accordingly, we reverse the examiner's decision rejecting all of the appealed claims under 35 U.S.C. § 103.

*REVERSED*

CHUNG K. PAK	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
CHARLES F. WARREN	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
	)	
	)	
	)	
TERRY J. OWENS	)	
Administrative Patent Judge	)	

CKP:hh

Appeal No. 1998-2920  
Application No. 08/128,740

*KUBOVCIK AND KUBOVCIK  
THE FARRAGUT BLDG.  
900 17<sup>TH</sup> STREET, N.W.  
SUITE 710  
WASHINGTON, DC 20006*